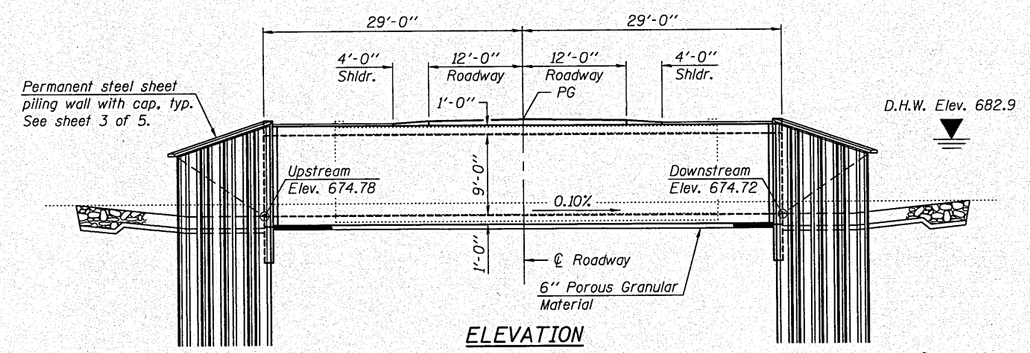
Benchmark: Chiseled square on northwest headwall of Structure No. 074-8606; 20.4' Lt. Sta. 251+53.7. Elev. 685.34.

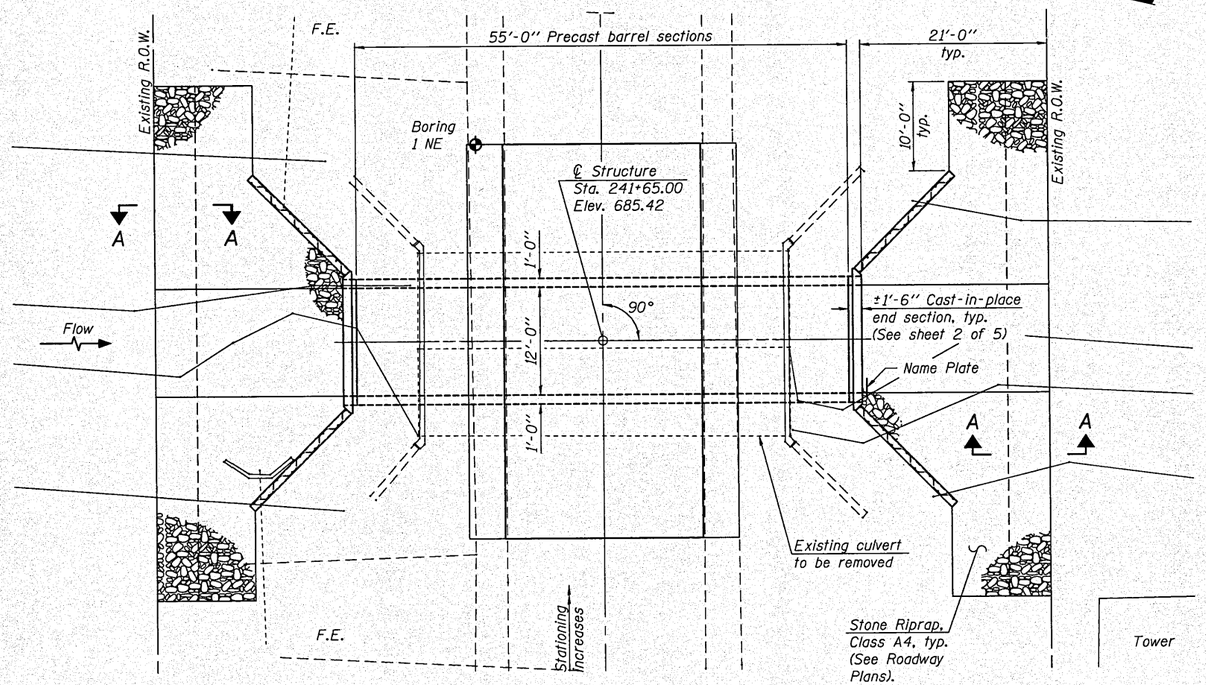
Existing Structure: S.N. 074-0049 was constructed in 1939 at Sta. 241+65 as a double barrel 10' x 9' reinforced concrete box culvert as F.A. 135, Section 10B in Piatt County. The existing structure is to be completely removed and replaced. The road is to be temporarily closed during construction.

INDEX OF SHEETS

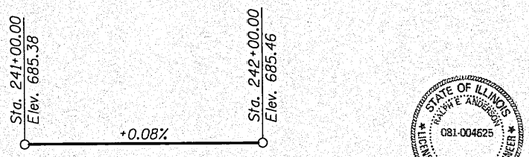
1 - General Plan & Elevation
2-3 - Box Culvert End Section Details
4 - Bar Splicer Assembly Details
5 - Soil Boring Logs



ELEVATION



PLAN



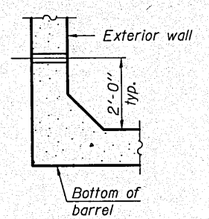
PROFILE GRADE

STATE OF ILLINOIS WAYNE E. ANDERSON 081-004625 LICENSED STRUCTURAL ENGINEER SPRINGFIELD

EXPIRES 11-30-2012

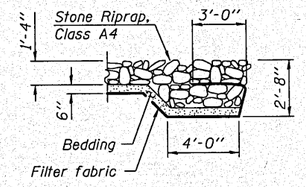
CULVERT CONSTRUCTION SEQUENCE

1. Remove existing structure
2. Build cutoff wall
3. Prepare bed
4. Place precast box culvert sections.
5. Form and place concrete in end section
6. Drive sheeting
7. Backfill culvert and wings
8. Install sheet pile cap



DRAIN DETAIL

Provide 3" ϕ drain holes in exterior walls at ±8' cts. See Article 503.11 of the Standard Specifications.



SECTION A-A

GENERAL NOTES

Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60.

The reinforcement shall be according to Table 1 for a 12x12 box.

Layout of slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.

The design fill height for this structure is less than 2 feet. The precast concrete box culvert sections shall conform to the requirements of AASHTO M273.

The minimum effective section modulus of the permanent sheet pile wall shall be 25 in.³/ft.

The sheet pile cap shall be AASHTO M270 Grade 50W.

Fasteners shall be AASHTO M164 Type 3. Bolts $\frac{1}{2}$" ϕ, holes $\frac{5}{8}$" ϕ.

Areas of the precast box culvert in contact with cast-in-place concrete shall be sandblasted, cleaned, and wetted prior to placing concrete in the field according to Article 503.09(b) of the Standard Specifications.

Sheet piling shall not be driven until the concrete strength has attained a minimum flexural strength of 650 psi or a minimum compressive strength of 3500 psi.

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Removal of Existing Structures No. 2	Each	1
Name Plates	Each	1
Box Culvert End Sections, Culvert No. 2	Each	2
Precast Concrete Box Culvert 12' x 9'	Foot	55.0
Stone Riprap, Class A4	Sq. yd.	196
Filter Fabric	Sq. yd.	196
Permanent Benchmark	Each	1
Porous Granular Embankment	Cu. yd.	427

DESIGN SCOUR ELEVATION TABLE

Design Scour Elevation (ft.)	Upstream	Downstream
	670.78	670.72

WATERWAY INFORMATION

Drainage Area = 1.07 mi.²

Proposed Low Grade Elev. 685.41 @ Sta. 241+54.55
Existing Low Grade Elev. 685.41 @ Sta. 241+54.55

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Nat. H.W.E.	Head - Ft. Exist.	Head - Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.
	10	145	112	71	681.9	0.0	0.1	681.9	682.0
Design	50	222	132	83	682.9	0.1	0.4	683.0	683.3
Base	100	255	139	87	683.3	0.1	0.5	683.4	683.8
Max. Calc.	500	332	151	94	684.0	0.3	1.0	684.3	685.0

10 year velocity through existing bridge = 2.48 ft./sec.
10 year velocity through proposed culvert = 4.56 ft./sec.

STATION 241+65.00
BUILT 201 BY
STATE OF ILLINOIS
F.A.S. RTE. 1531 SEC. 10B-1 & 11B-1
LOADING HS 20-44
STRUCTURE NO. 074-8606

NAME PLATE

See Std. 515001

DESIGN STRESSES

FIELD UNITS

f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)
fy = 38,000 psi (permanent sheet piling)
fy = 50,000 psi (AASHTO M270, Grade 50W)

PRECAST UNITS

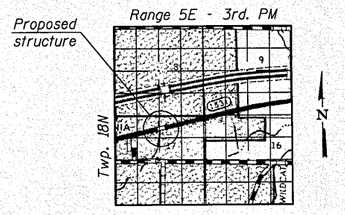
f'c = 5,000 psi
fy = 65,000 psi (welded wire fabric)

LOADING HS 20-44

Allow 50#/sq. ft. for future wearing surface.

DESIGN SPECIFICATIONS

2002 AASHTO



LOCATION SKETCH

GENERAL PLAN & ELEVATION
F.A.S. ROUTE 1531 OVER STREAM
F.A.S. RTE. 1531 - SEC. 10B-1 & 11B-1
PIATT COUNTY
STATION 241+65.00
STRUCTURE NO. 074-8606

DESIGNED	-		
CHECKED	-		
DRAWN	-	MICHAEL B. MOSSMAN	
CHECKED	-		

EXAMINED
PASSED
ENGINEER OF BRIDGE DESIGN
ENGINEER OF BRIDGES AND STRUCTURES
DATE - 12-8-10

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET NO. 1 OF 5 SHEETS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1531	10B-1 & 11B-1	PIATT	88	23
		CONTRACT NO. 70458		
		ILLINOIS FED. AID PROJECT		